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EFFECT OF THE PANAMA CANAL ON SEA TRAFFIC

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THE EFFECT OF THE PANAMA CANAL ON SEA TRAFFIC

WRITTEN BY

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PRESENTED BY MR. WORKS

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REPORTED BY MR. CHILTON.

IN THE SENATE OF THE UNITED STATES,
July 9, 1914.

Resolved, That the manuscript submitted by Mr. Works on April 1, 1914, entitled "Effect of the Panama Canal on Sea Traffic," by Mr. Russell L. Dunn, of San Francisco, Cal., be printed as a Senate document.

Attest:

JAMES M. BAKER,
Secretary.

EFFECT OF PANAMA CANAL ON SEA TRAFFIC.

Written by RUSSELL L. DUNN, of San Francisco.

The Robert Dollar Co., a shipping business of San Francisco, operating both coastwise and foreign lines, last week contracted to carry 24,000,000 feet of pine lumber from Victoria, British Columbia, via the Panama Canal, to Toronto, Ontario, for a freight charge of $6 per 1,000 feet.

As a thousand feet of British Columbia lumber weighs about 1⅔ tons, the freight charge is at the rate of approximately $3.60 per short ton dead weight. If it be assumed, as is reasonable, that, this traffic not being coastwise and thus toll exempt, the freight rate covers the Panama Canal toll of $1.20 per registered ton of the carrying vessel, then the net freight charge—the charge for the transportation—is about $2.90 per ton by dead weight.

Lumber is a staple article of commerce produced nowhere on earth in an equal area so largely or so cheaply as in the Pacific coast States of California, Oregon, and Washington, and in the Canadian Province of British Columbia. The fact that it is shipped into Ontario, itself a great lumber-producing Province of Canada, is conclusive as to the comparative cheapness of Pacific coast lumber production over Atlantic coast lumber production. The magnitude of the shipment, 40,000 tons dead weight; the grade of the lumber, which is rated as "common"; and the amount of the freight charge, $144,000, take the estimation of the effect of the Panama Canal on sea traffic out of the domain of uncertain speculation and into to-day's business of the actual, which may be figured in advance with reasonable certainty and exactness.

CARRIERS OF LUMBER ARE PETROLEUM-BURNING STEAMSHIPS.

The ships which will carry this lumber are petroleum-burning steamships. They are very much cheaper to operate than coal-burning steamships, and carry freight at a correspondingly lower ton rate per sea mile. California is the great world producer of this fuel petroleum, and with the Panama Canal outlet into the Atlantic, its production seems certain to largely replace coal for steamship fuel on Atlantic lines, as well as for all the ship lines engaged in traffic through the canal to and by California seaports. California petroleum is thus certain of becoming a great staple export through the canal, in addition to being a commodity of home consumption already amounting to 17,000,000 tons annually.

CANAL CARRIERS TO BE PETROLEUM-BURNING DIESEL MOTOR SHIPS.

The petroleum-burning steamship is not now the cheapest freight carrier. It is in course of being displaced in that respect by the petroleum-burning Diesel motor ship. The first vessel of this new

type to be built on the Pacific coast was launched on March 14 of this year from a San Francisco shipbuilding yard. A considerable number of this type of vessel are already in service on the Atlantic, burning petroleum obtained from Sumatra and Russia, both more costly than will be the California petroleum. As compared with the petroleum-burning steamship, the petroleum-burning motor ship of the same net carrying capacity is about a third less costly to operate and maintain. It will, of course, ultimately displace the petroleum-burning steamship just as the latter is displacing the coal-burning steamship.

SEA DISTANCES OF FOREIGN PORTS.

The sea distance by the Panama Canal between Victoria, British Columbia, and Toronto, Ontario, is almost precisely the sea distance by the canal between San Francisco, Cal., and Liverpool, England. It may be assumed that the freight rate between San Francisco and Liverpool will be no more than, and probably less than, between Victoria and Toronto. We have thus a fairly precise basis of estimation for Panama Canal freight rates between San Francisco and the principal European seaports, using the actual rate contracted by the Robert Dollar Co. for carrying lumber from Victoria to Toronto. The sea distances to any of the principal European seaports from San Francisco are not greatly different, as may be seen on reference to the following table of the comparative distances:

	Miles.
Victoria, British Columbia, to Toronto, Ontario	7,864
San Francisco to—	
Liverpool, England	7,866
Southampton, England	7,800
London, England	7,965
Havre, France	7,795
Bordeaux, France	7,650
Marseille, France	8,530
Antwerp, Belgium	8,030
Hamburg, Germany	8,320
Naples, Italy	8,830
Genoa, Italy	8,800
Palermo, Italy	8,770
Trieste, Austria	9,770

SEA DISTANCES OF COASTWISE PORTS.

New York is 2,568 miles nearer San Francisco through the Panama Canal than Liverpool, and the other principal Atlantic coastwise ports are still nearer, as indicated by the following table of comparative sea distances between the ports.

San Francisco to—	Miles.
New York	5,298
Philadelphia	5,265
Baltimore	5,250
Mobile	4,720
New Orleans	4,723
Galveston	4,500

Practically whatever sea freight rate through the canal will be made for the ports of New York and San Francisco will be made for traffic between the other Atlantic and Gulf ports and San Francisco.

DIESEL MOTOR SHIP FREIGHT RATES.

A foreign built and foreign operated Diesel motor ship, making 12 knots an hour and carrying 10,000 tons dead weight of freight, can be run between San Francisco and Liverpool, paying 8 per cent return on investment, on total fixed charges and running expenses aggregating about $20,000 a trip, more or less than this sum, as the price of fuel oil in California varies from $1 per barrel assumed in this estimate. This is equal to a mean freight rate of about $2 per ton dead weight, which sum can be estimated as the mean rate at which staples will ultimately be moved between San Francisco and all the principal ports of Europe.

A similar American-built and American-operated Diesel motor ship can be run between San Francisco and New York, paying 8 per cent return on investment, on total fixed charges and running expenses aggregating about $20,000 a trip, or about the same sum as the foreign-built and foreign-operated Diesel motor ship run between San Francisco and Liverpool. The reasons are well known why this will be so—higher cost of American shipbuilding, higher salaries, higher wages for sailors, and higher overhead charges, counterbalancing the shorter trip period and correspondingly less fuel consumption.

As between similar petroleum-burning steamships of 10,000 tons dead weight carrying capacity, the foreign-built ship on the longer Liverpool trip would likely run on a less aggregate trip cost, which would be about $30,000, than the American-built ship on the shorter coastwise New York trip. As between 10,000 ton coal-burning steamships, the foreign ship on the longer Liverpool trip would be run on a very much less aggregate trip cost than the American-built steamship on the coastwise New York trip.

PANAMA CANAL WILL EFFECT DIVERSION OF PACIFIC COAST TRADE.

With substantially the same Panama Canal freight rates between San Francisco and European ports as between San Francisco and New York, it can be foreseen that all Pacific Coast imports from Europe will come direct to San Francisco through the canal, this being a diversion of the same foreign trade of the Pacific Coast now conducted through the port of New York. Also, it can be foreseen that a large, if not the larger part of the present Pacific Coast imports from the Mississippi Valley and North Atlantic States, will be brought instead from Europe, this being a diversion of trade from our American States to foreign countries.

It can be foreseen, too, that exports of the Pacific coast will, through the canal, enter the Atlantic and Gulf coasts ports and markets excluding more or less of the present imports into them from the Mississippi Valley and North Central Atlantic States, this being a diversion of trade from these interior States to the Pacific coast States. Also, that exports of the Pacific coast will enter the European markets excluding more or less of their home productions and of their imports from our Atlantic States and the countries of eastern Europe and of Asia, this being a diversion, and in the aggregate a very large diversion of trade from these States and countries to the Pacific Coast States and Provinces.

PANAMA CANAL TOLL NO BAR ON PACIFIC COAST FOREIGN TRADE.

Payment of the present Panama Canal toll imposed on foreign trade of our States, if it should be found constitutional, would be avoided in the Pacific coast traffic by making Colon, at the Atlantic end of the canal, the port of export for Pacific Coast States products brought to it in coastwise traffic, and the port of import of the Pacific coast States for foreign imports. Practically, the foreign ships and coastwise ships would interchange cargoes at Colon, both exports and imports of the foreign trade going through the canal in coastwise shipping and thus exempt from toll, the cost of interchanging cargoes being very much less than the present $1.20 per ton toll charge.

If no more than the present toll be imposed on foreign trade ships and coastwise ships alike, it would lessen the volumes of both foreign and coastwise trade, more of the foreign than coastwise, in low-priced staples, the toll being equivalent to a specific export duty on Pacific Coast States products, and equivalent to a specific import duty on foreign and Atlantic States products consumed in the Pacific Coast States. The Pacific Coast States, producers of the exports, and the Pacific Coast States, consumers of the imports, would pay the tolls in higher prices for what they would import and in lower net profits on what they would export. Practically, the Pacific Coast States, producers of exports and consumers of imports, by paying the Panama Canal toll would pay the fixed charges and operating costs of the canal, and if there be any surplus collected, would be paying the cost of the canal. In other words, the Panama Canal built by the credit (not money) of the people of the United (48) States, through toll imposition, would come to be operated and paid for by the people of only seven of the States—the Pacific Coast States—who would be compelled to make use of it.

GREAT EXPANSION OF PACIFIC COAST TRADE AN EFFECT OF PANAMA CANAL.

The Pacific coast, besides lumber and petroleum, has enormous and cheaply mineable deposits of many useful minerals, great undepleted fisheries, and can cheaply increase manyfold its present production of fruits, vegetables, and grains. The low freight rate through the canal opens the markets on both shores of the Atlantic to these products on more favorable than even terms.

No estimate of this new export traffic made now can be more than tentative. The present traffic movement from the Pacific coast has been estimated at about 3,500,000 tons annually, 85 per cent of it by the transcontinental railroads overland. It is probable that two-thirds of the rail-carried tonnage will become diverted through the Panama Canal. Assuming this diversion of trade from rail to sea carriers, the annual freight tonnage exported from the Pacific coast through the canal after the new trade adjustments become made may be something about as follows:

	Tons.
Present export tonnage by sea routes	500,000
Probable diversion from railroads	2,000,000
Lumber, 1,000,000,000 feet	1,650,000
Petroleum, 25,000,000 barrels	4,000,000

	Tons.
Borax, soda, potash, and nonmetallic minerals	1,500,000
Metal ores and metals	500,000
Green fruits and vegetables	800,000
Prunes, raisins, canned and dried fruits, wine	400,000
Grain and hay	500,000
Fish, fresh and cured	250,000
Wood pulp, paper, and other manufactures	400,000
Total annual exports through canal	12,500,000

Surprising though this total may appear in comparison with the present annual export tonnage of 3,500,000 tons, it is nevertheless conservative. A very large petroleum producer is my authority for the statement that those best informed in that business, figuring on a canal freight rate of 30 cents a barrel, equivalent to $2 per ton by weight, with no toll, anticipate exports of petroleum through the canal of 100,000,000 barrels (17,000,000 tons) annually within the fifth year following the canal opening.

The estimate has been made that the annual imports of the Pacific coast aggregate about 3,500,000 tons, 85 per cent of it being by rail overland. It may be estimated that practically all of this tonnage will reach the Pacific coast through the canal. With it there will be imported iron, steel, cement, and brick, principally from European centers of their manufacture, and the many varied articles which the rapid settlement of a great immigrant population in the Pacific Coast States and Provinces will require. The Pacific coast is so abundantly supplied with the staple raw materials that it is unlikely that the tonnage of its annual imports will equal that of its exports for very many years.

The balance of this Panama Canal trade seems certain to be largely in favor of the Pacific coast for more years ahead than can now be counted. Possessing cheap hydroelectric power, cheap petroleum fuel, cheap raw materials, and an exceptionally favoring climate the Pacific coast will be independent of imports for many manufactures consumed by it. On the other side, the Pacific coast will have in addition to the income from its great surplus tonnage of exports another income from the petroleum fuel consumed by the ships carrying its commerce both ways. Practically one-quarter of its freight payments on exports and imports will come back in payment of the cost of the petroleum fuel.

PANAMA CANAL EFFECT ON RAILROADS.

The Panama Canal will have comparatively little effect on the Atlantic Coast States railroads. The coast-to-coast traffic of freight they will lose is but a small part of their total traffic. They will lose some of their present freight carrying east from the Mississippi Valley and north central Atlantic States. They will gain some freight carrying of Pacific coast exports through the canal coastwise going inland from Atlantic ports. It can not be foreseen that the net change of income made incident by the Panama Canal will be very much.

The Panama Canal would now seem certain to materially lessen the freight traffic of the railroads between the Allegheny and Rocky Mountain Ranges. These railroads are certain to lose all their

present westbound coast-to-coast freight and two-thirds of their present eastbound coast-to-coast freight. They are also certain to lose most of the westbound Pacific coast freight originating in their territory. The greater part of this last-described freight will become diverted to new points of origin in the Atlantic States and Europe, and the remainder will, as near as practicable, take the all-waterway route to the Pacific coast by the Mississippi River to New Orleans and thence by the canal.

The Panama Canal will have the effect of enormously increasing the traffic over railroads west of the Rocky Mountains—the Pacific coast railroads. These lines, losing their proportion of the present westbound overland freight to the canal, would, nevertheless, take most of it back again as east, or inland bound, local traffic from Pacific coast ports, making probably a larger net earning from it as all-local traffic than they are now making from it as part of the coast-to-coast traffic. They will lose about 2,000,000 tons of their present annual eastbound freight movement, recovering some of it as local traffic from inland points of origin to coast seaports.

All of their net loss by diversion of their traffic will, however, be very much more than counterbalanced by the increased Pacific coast exports, over 5,000,000 tons of which have to be moved by railroads from inland points of origin to coast ports; by the increased tonnage of Pacific coast imports through the canal, over half of which will have to be carried by rail inland from the seaports; and by the increased local freight carrying of Pacific coast products from producers to consumers. It is doubtful, indeed, if the present railroads in Pacific coast territory are able now to carry the greater tonnage which will be the effect of the Panama Canal. It would seem as if many more new lines must be built and many existing lines double-tracked.

With a possible $2 a ton sea freight rate between San Francisco and New York, overland competition of railroads is simply annihilated. There will be no transcontinental railroads within the meaning of the term as we have become accustomed to it. There can be no political questions over transcontinental freight rates, because freight will simply cease going over the railroads that way. The Central Pacific Railroad, least of all the present so-called transcontinental railroads, will be one of them. It will instead become a great tributary railroad system to the port of San Francisco, distributing imports and collecting exports for it in western Montana, Wyoming, Colorado, and New Mexico as well as in the seven Pacific Coast States. In this respect it will occupy much the same traffic situation to San Francisco in a vastly greater territory that the New York Central Railroad system occupies to New York.

PANAMA CANAL EFFECT ON POPULATION MOVEMENTS.

It goes without saying that the population of the Pacific coast will become enormously increased by immigration within a short period as an effect of the Panama Canal. The mere expansion of the Pacific coast exports estimated, 10,000,000 tons annually, will require a great addition to the present population to accomplish the production. But, independent of this trade condition inviting settlement by immigrant population, the Panama Canal is the opening through of an hitherto impassible barrier to the emigration of millions of the peoples

of European nations. Among the classes of Europeans most anxious to better their material conditions by emigration, the idea of California being the land where the yellow gold is had for the picking of it from the ground persists as an inspiration to go there from the time, more than 60 years ago, when its first discovery in California was published to them.

The canal offers these peoples the cheap, direct way to this land of wonderful opportunity. The ship passage to San Francisco from European seaports for emigrants will be very little, if any, more than passage fare for emigrants has been from the same European seaports to New York. Both work and land will be ready to be taken by these European emigrants when they come. It will be surprising indeed, if, in the first three years following the opening of the canal, there do not come through it to the Pacific coast more than 500,000 immigrants yearly from European countries. This, however, will not be the only immigration into the Pacific coast consequent on the canal. It seems probable that there will be a diversion overland of the present emigration from the Mississippi Valley States into the Canadian Provinces east of the Rocky Mountains, to the Pacific coast States and Provinces, increased from the same States by emigrants who are impelled to move through the effect on their industries of the diversion of the present Pacific coast trade from them by the canal.

PANAMA CANAL EFFECT ON THE EUROPEAN-ASIATIC TRADE.

Whether "toll" or "free" will be determinative of the effect of the Panama Canal on the present European-Asiatic trade conducted by the sea route through the Suez Canal. This ship-carried commerce through the Suez Canal is largely a carrying of freight between ports along the route between the terminals of the lines on the Atlantic coast of Europe and the Pacific coast of Asia. Yokohama and Vladivostok are respectively in Japan and Siberia, the farthest east and north terminals of the through Suez Canal lines. On the Panama route to these last-mentioned ports there is no such succession of way ports furnishing freight traffic between them. Comparative distances by the alternative canal routes to the great ports of eastern Asia are as follows:

Liverpool to—	Via Panama and San Francisco.	Via Suez.	Difference of distance against Panama route.
	Miles.	*Miles.*	*Miles.*
Yokohama	12,400	11,678	722
Vladivostok	13,010	11,760	1,250
Shanghai	13,452	10,607	2,745
Hongkong	13,892	9,785	4,107

If toll is collected on the Panama route as on the Suez, and the same toll on our coastwise traffic, it does not appear as if there would result any diversion of the present Suez Canal traffic to the Panama Canal route. There would be nothing to be gained by the change. No freight movement, from even Japan, not now carried by trans-Pacific steamship lines from the Pacific coast from San Francisco

north would be diverted from the Suez Canal route on which to base the establishment of European-Asiatic ship lines through the Panama Canal.

If, on the other hand, the Panama Canal be made toll free, the differential ($1.20 per registered ton under the present regulation) thereby created against traffic by the Suez Canal lines, and the Pacific coast north from Panama requiring less ship tonnage capacity for its imports from Europe than for its exports to Europe, make probable the diversion of some European-Asiatic traffic from the Suez Canal route. Freight from Europe to Japan, Siberia, and China would be carried to San Francisco from Europe by the ships engaged in the Pacific coast traffic and at San Francisco transferred to ships engaged in the Pacific coast traffic with Asia. There is reason for the opinion that, with the largely increased population and commercial activity in Pacific coast territory following on the opening of the canal, its imports from Asiatic countries will very largely exceed American exports to them, thus leaving clear cargo capacity for the westbound European-Asiatic freight.

Sea freight by coal-burning steamships from New York by the Suez Canal to Vladivostok, Siberia, or to Yokohama, Japan, is $10 per ton. Reduced to Diesel motor-ship transportation basis assumed for comparison, the freight rate would be about $5.25 per ton, inclusive of the Suez Canal toll, fuel petroleum being estimated to cost $1.50 per barrel ($1 cost f. o. b. in California, plus 30 cents freight, 17 cents Panama Canal toll, and 3 cents carrying interest charge); and the freight rate from Liverpool to Yokohama, 2,000 miles less distance, would be about $4.75 a ton.

From Liverpool to Yokohama by the Panama Canal, including the cost of transshipment at San Francisco, the Diesel motor ship freight rate, not including a Panama Canal toll, would be about $3.75 a ton. Toll-free, the Panama Canal route would have about $1 per ton advantage of the Suez Canal route, which includes a toll payment of $1.20 per registered ship tonnage. This $1 per ton advantage at Yokohama would make Hongkong, in southern China, the port at which rates would be substantially equal either way around the world. With a Panama Canal toll the freight rates by either route would equalize at Yokohama, so that no present European-Asiatic freight traffic through the Suez Canal would become diverted to the Panama Canal route. This would apply to traffic of our Atlantic States with China, Japan, and Siberia also. With a Panama Canal toll on coastwise traffic all the trade of the Atlantic States with eastern Asiatic ports, excepting only Yokohama, will have lower freight rates by the Suez Canal in foreign ships than by the Panama Canal in our own ships. Freight rates from New York to Yokohama by the Suez Canal will be about the same as freight rates between the same ports by the Panama Canal with toll included.

PANAMA CANAL EFFECT ON THE PORT OF SAN FRANCISCO.

San Francisco will inevitably become the Pacific coast terminal of all the ship lines through the Panama Canal and of all the trans-Pacific ship lines. Three causes will contribute to produce this effect.

First. Our American coastwise navigation laws which tend to make it unprofitable for foreign ships to enter more than one port of our States.

Second. The cheap petroleum fuel of which San Francisco has a natural monopoly for the supplying of ships which will engage in the Panama Canal and trans-Pacific trade. In this respect its position is unique among ports of the world which are centers of great ship-carried commerce. For the new Diesel motor-ship type of ship, the port of San Francisco can supply, and the ship can take on, fuel petroleum sufficient for its round trip from San Francisco to any port of the world while the ship is discharging and taking on cargo. None other of the great ports of the world can equal this facility at the price.

Third. The fast passenger ships from European ports will be able to get export freight to Europe on better terms and in larger and surer supply at San Francisco than at any other Pacific coast seaport. These fast passenger liners will move fresh fruits and vegetables and the higher classes of exports—those requiring quick transit to market and paying the highest charges. There is no other Pacific coast territory which can equal the Sacramento and San Joaquin Valleys, close to San Francisco, in the production of these classes of exports.

Becoming the terminal for the Panama Canal and trans-Pacific ship lines, San Francisco will necessarily become the collecting center and the distributing center of the Pacific coast local freight traffic by rail inland, and coastwise to the other Pacific coast ports. It will, too, become a point of assemblage of enormous quantities of raw materials and the port of entry of a constantly renewed stream of immigration supplying cheap labor during the period of its adjustment to its new conditions of life. Having already cheap petroleum fuel and cheap hydroelectric power, its development as a great manufacturing center seems inevitable. Both in commerce and population the limit of its future development can not at this time be measured.

SUMMARY OF PANAMA CANAL EFFECT ON SEA TRAFFIC.

Petroleum-burning Diesel motor ships will become the ship freight carriers on both oceans through California petroleum becoming available for such use on the Atlantic Ocean.

The basic freight rate for staples through the canal between the Pacific coast and either New York, Liverpool, or other European ports will be about $2 per ton dead weight, exclusive of canal toll.

Pacific coast foreign trade with Europe will become diverted from the overland-New York route to the all-sea route through the canal.

The present Pacific coast trade overland with the Mississippi Valley and north-central Atlantic States will become largely diverted into direct trade by the all-sea route through the canal with the Atlantic States and Europeans countries—more largely the latter than the former.

The trade of the Pacific coast will become enormously expanded through the cheapness and availability of the all-sea route through the canal as an outlet for products hitherto unmarketable on the Pacific coast.

The Atlantic coast railroads will be very little affected; the railroads between the Alleghany and Rocky Mountains will lose practically all of their Pacific coast traffic; and the railroads of the Pacific

coast will gain enormously in traffic from the handling to and from the seaports of the new exports and imports. Transcontinental railroads as such will cease to be. Transcontinental freight rates can not be made competitively with an open all-sea freight rate of $2 per ton.

The Pacific coast will gain rapidly and enormously in population by immigration from European countries through the canal, and by immigration from our Mississippi Valley States by rail overland, and this new population will increase the all-sea route trade between the Pacific coast and Europe.

If the canal be toll-free there will result a diversion of present all-sea traffic between our Atlantic States and European countries through the Suez Canal with China, Japan, and Siberia to the new all-sea route by the Panama Canal and San Francisco.

If a canal toll be charged the present all-sea traffic of our Atlantic States and European countries with eastern Asia will continue to take the Suez route as being the cheaper.